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ABSTRACT

Tagmemic invention offers a student several ways of decreasing the unfamiliarity of the early stages of writing. The process of inquiry and the heuristic devices provide the orientation and tools for dealing with new writing tasks with increased confidence and likelihood of success. In the theory of tagmemic rhetoric, language behavior and problem-solving activity are held to be features recurrent in all writing, and tagmemic invention makes use of this theory by illuminating one's own writing habits for possible alteration and by increasing the efficiency of one's own inventional skills. The theory is loosely segmented into four stages of inquiry: preparation, incubation, illumination, and verification. There are three inventional heuristic categories: strategies for the analysis and articulation of problems, the systematic exploration of a subject, and the testing of a solution for its soundness. Formal testing of tagmemic invention in the classroom has confirmed that it develops students' inventional skills with benefits to the overall quality of their writing. Through the use of heuristics as a means of intervening productively at crucial stages in the writing process, students can learn to enhance their natural writing capacities. (DF)

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AN INTRODUCTION TO TAGMEMIC INVENTION

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Writing is, more often than not, a venture into the unknown. It asks us to chart a way of getting around in some new territory, some "region" of the mind, or some dimension of experience which we have never before articulated. It somehow cuts us loose from prior landmarks and well-known footings and demands that we create a new world in words. By ourselves. Tagmemic invention is designed to lessen the disorientation brought about by new circumstances for writing; it is a way of establishing some constant landmarks through a diversity of writing tasks. For as long as writing seems new in each instance, as long as the constantly changing terrain of particular subject matters and particular methods of approach appears to have no recurring features, writing itself remains an unknown, along with the subjects and problems it explores.

In tagmemic rhetoric, language behavior and problem-solving activity are thought to be features recurrent in all writing, and are specified in an explicit theoretical base. Tagmemic invention makes use of this theory in two ways: First, insofar as theories of language use and problem-solving activity are generalized descriptions of individual human behavior, tagmemic rhetorical theory becomes a means of growing conscious of one's own writing habits, thereby making them available for change. Second, rhetorical theory, when it is systematized through inventional strategies, or heuristic procedures, also becomes a means for increasing the efficiency of one's present inventional skills. The possibility of correcting unproductive writing behavior and of introducing systematic method where it is useful only comes with the reflection on prior patterns of writing activity that rhetorical theory allows. It is central, then, to tagmemic rhetoric, including tagmemic invention, for without rhetorical theory as a kind of "map" to recurrent features in writing, individual writing experiences cannot help but be undirected and haphazard--seemingly new ventures into new unknowns each time.

INVENTION AS INQUIRY

Only writing viewed as a dimension of human experience--writing as a process--introduces these complications to rhetoric. Such issues as control in writing, the

use of heuristic procedures, or the need to reflect on prior writing practice, only emerge when writing is addressed as experience, as something we do. In tagmemic rhetoric, invention is a component of a larger process--the composing process, or rhetoric itself viewed as a process. Within this sequence of events, theoretically, invention happens first--prior to other stages in writing. In practice, however, the levels of the composing process do not line up in a neat, linear sequence; they tend to blend and merge and interpenetrate each other. For example, Richard Young, Alton Becker and Kenneth Pike, whose text, Rhetoric: Discovery and Change, is the fullest available statement on tagmemic rhetoric, believe that "writing frequently serves as an opportunity to explore and clarify... experience."[1] In this view, the act of writing itself becomes inventional, and invention becomes comprehensive of what is for us the lived experience of writing--what we do as we prepare to write and as we write. Tagmemic invention is not merely preliminary to the writing process; it cannot be identified with prewriting because it does not end tidily prior to drafting. Inventional activity continues throughout the writing process because we continue to discover what we think as we write.

If in actual writing practice, invention is not neatly roped off from other aspects of the writing process, in theory, invention has a domain of its own. Tagmemic invention is unified within an overarching theory of problem recognition, exploration, solution and testing, a sequence which Young, Becker and Pike call the "process of inquiry," after John Dewey. And when the boundaries of invention are defined by the process of inquiry, invention would seem to have reached its limits; all experience, from the "conceptual itch" or "felt difficulty" which signals a problem, through the testing of a hypothesis as a solution to the problem, falls within its province.

This encompassing theory for tagmemic invention, the process of inquiry, is loosely segmented into four stages: preparation, incubation, illumination and

verification. Preparation as a stage in the process includes three substages: the sensing of a difficulty which marks the intuition of a problem; the explicit articulation of the difficulty as a problem; and the exploration of this problem in search of a solution for it. Two major heuristic procedures in tagmemic invention are addressed to this stage. Incubation, the second stage in the process of inquiry, is a stage of subconscious activity, a time when the mind continues to work at a problem while a writer is no longer consciously engaged with it. Illumination or inspiration, the third stage, marks the discovery of a solution, an ordering hypothesis. And verification, the last stage in the process, tests the validity of the solution which has been proposed. A third heuristic procedure accompanies this stage. The composing process, we saw, is not adequately described by a simple, linear view of its levels; neither is the process of inquiry. Like the process of composition, it should be seen as potentially recursive and likely to collapse certain of its stages at times. For the purposes of inventional theory, however, these four stages--preparation, incubation, illumination and verification, are usefully distinguished as parts of the whole process of inquiry.

This vocabulary of problems and solutions and testing is distinctive of tagmemic invention; tagmemic rhetoric is unique in its appropriation of problem-solving theory. The process of inquiry as a constant feature of writing is no invention, however. Writing activity has always had its genesis in the recognition and resolution of problems. Only its formulation as a component of rhetorical theory is new. And with this formulation, this explicit analysis of invention as a process, invention becomes available for scrutiny and systematization. It is opened to teaching. For without a theoretical description, the process of inquiry remains an unknown; any conscious direction of its progress is impossible. The theory and vocabulary of invention as inquiry make these early stages of writing available to study and discussion; and the three heuristic procedures tagmemic invention offers as adjuncts to the process make strategic intervention in invention

possible.

THE HEURISTICS OF TAGMEMIC INVENTION

The three tagmemic inventional heuristics--strategies for the analysis and articulation of problems; the systematic exploration of a subject; and the testing of a solution for its validity--are clustered at the first and last stages of the process of inquiry. The first of the three, the problem statement, makes language itself the primary means of setting a direction for inquiry. For although invention is more immediately directed to thinking than writing, the writing process intersects with the process of inquiry. In the deliberate articulation of a problem language becomes an instrument for inquiry. As the authors of Rhetoric: Discovery and Change explain, "Language is not only a means of communicating with others..." In inquiry, it becomes "an instrument for communicating with one's self."[2] Tagmemic invention holds that the clarity of perception required to frame a problem verbally is necessary for sufficient control to launch a systematic investigation of a problem. And a poorly-articulated problem can be as detrimental to inquiry as a well-stated problem can be useful. The student needs to learn how to state a problem well. To this end, tagmemic invention provides a student with instruction in problem recognition and statement, and a heuristic for discovering the most problematic aspect of the problem statement, the unknown.

The tagmemic heuristic for discovering an unknown encourages a writer to play with it--systematically. By classifying and reclassifying the unknown in various classes of questions--questions of fact, questions of process, questions of relationship, a student will either confirm that his original problem statement was accurate, or he will stumble on another, better way of putting it. Because it serves as an "instruction for effective investigation," Young, Becker and Pike believe that a well-stated unknown is fundamental to systematic inquiry: "It defines what is sought and guides but does not constrict inquiry."[3]

Within the process of inquiry, the tagmemic nine-cell matrix serves the student

as a heuristic guide to the remaining task in the preparation stage--the exploration of the problem. The matrix is a set of categories and questions, or operations, designed to aid a writer in exploring a problem systematically. It is a guide to shifting perspectives methodically, a way of covering all the bases, of being certain that one is investigating a subject with systematic thoroughness. It encourages a student to manipulate his thinking about the problem by trying a variety of perspectives in approach to it, noting its essential features while viewing it within a particular perspective. Richard Young, creator of the matrix, believes that "The procedure explicitly takes account of the various cognitive domains to which a unit of experience can be related and which together give the event its meaning..." The categories and questions of the matrix "complement each other, and taken together," Young believes, "they constitute an operational definition of thinking well."[4]

The three by three by three matrix might be called the "centerpiece" of tagmemic invention. It is at once a heuristic device for systematic investigation and a conflation of the major theoretical assumptions underlying tagmemic rhetoric. A student who has studied the foundations of tagmemic rhetorical theory prior to encountering the matrix--the maxims presented in Rhetoric: Discovery and Change, for example, will have an enriched understanding of its intersecting categories. For use of the heuristic, however, this prior knowledge is not necessary. Understanding the origins and independent value of its parts makes the matrix a subject of interest in itself, but for the purposes of tagmemic invention, the matrix is a means rather than an end. Certainly the categories of the matrix and the questions they raise will need explanation, but they will need it in order for a student to understand the kind of perspective which is implied in order to perform the operations it suggests. The matrix is an aid, a supplement or guide to natural processes of thought and action; and like any heuristic device, use of the matrix first requires familiarity with it. The idea of multi-perspectival

investigation, for instance, rests on the fundamental concept that a perspective assumed on a subject determines what can be seen in it--a concept well put in Kenneth Burke's aphorism, "A way of seeing is also a way of not seeing."[5] This theoretical base for the heuristic is not obvious and a student needs to learn it in order to understand the purpose of the matrix. The various perspectives articulated in the questions filling its nine cells introduce the student to a range of approaches to a subject. These perspectives or operations also need to be taught, however common may be the activities they describe. Viewed operationally, the categories and questions of the tagmemic matrix suggest a rigorous investigation. They illustrate a principle of invention--the heuristic value of multi-perspectival, exhaustive investigation, or, put in the non-technical terms mentioned earlier, of thinking well. Study of the matrix and explanation of its use in the process of inquiry, then, are both necessary; they support each other. Finally, however, the matrix is, of course, designed for use rather than contemplation, and the mechanics of the method--the set of operations the matrix catalogues--become, in the process of inquiry, the activity of thorough exploration they describe and encourage.

The third and last heuristic of tagmemic invention is addressed to the other side of inquiry: it is comprised of a series of tests for the truth or believability of one or more hypotheses proposed as solutions to the problem. Three categories of tests are offered--tests for correspondence, for consistency and for usefulness; they are not merely alternatives, but complement each other. If appropriate, all three should be applied. The correspondence test weighs a solution's power of prediction, its capacity to stand the test of experience. The test for consistency tries a solution against one's system of beliefs. If a solution is congruent or consistent with what one already thinks, it passes the test. The least systematic test is last--the test of usefulness. If the solution produces some desired practical result it is thought to be at least useful, if not right and true. This

heuristic is markedly less rigorous than the detailed, step-by-step thoroughness of the earlier heuristics, and the authors of Rhetoric: Discovery and Change acknowledge this. Echoing Einstein, they write that the first test, the correspondence or experience-oriented test, seems to be the surest. But truth-testing has its limits. "Experience... is not an infallible guide to truth," they write, "but it is the best guide we have."[6]

MAKING THE HEURISTICS HEURISTIC

All the heuristics for tagmemic invention, as noted earlier, are allied to the process of inquiry. Used without regard to this process, the heuristic value of these devices will be considerably diminished. That is, it takes an understanding of both the process of inquiry and the heuristics in order to use these strategies strategically. The relationship between the preparatory heuristics and the incubation/illumination stages demonstrates how, in one instance, this works.

Incubation, it will be remembered, takes place when there is an absence of conscious effort. It is the distinctive contribution of the subconscious to the process of inquiry, a continuity of solution-seeking activity despite the conscious setting aside or abandonment of a problem. This extension of subconscious effort can precipitate the discovery of a problem's solution. Rhetoric: Discovery and Change offers examples such as Archimedes flooded by inspiration while taking a bath, or Henri Poincaré intuiting the solution to a mathematical problem as he boarded a bus.[7] Such inspirations or, in tagmemic terminology, illuminations, must be accounted evidence of continued subconscious effort at problem solution after conscious effort has not yet discovered an answer.

The value of the heuristics for problem articulation and systematic exploration is heightened in this light. Heuristic procedures could be said to supply the subconscious with the data it needs to supplement a writer's conscious efforts. While the subconscious activity of the incubation stage of inquiry cannot be

directly manipulated, it can be influenced. The subconscious can be informed. The benefit of systematic inquiry at the preparatory stage of the process of inquiry, then, appears to be double: the system introduced by heuristic strategies decreases the wasted effort and frustration characteristic of naive writing habits; it also efficiently instructs the subconscious, making its assistance possible. As Jerome Bruner writes, "Discovery, like surprise, favors the well-prepared mind."[8] The process of inquiry as a model for investigative process makes a student aware that his subconscious will work for him toward the solution of a problem, if he will only give it direction. The heuristics for problem statement and systematic exploration of a subject show him how to do two things at once: in using them, he is both consciously attempting the solution of a problem by efficient means, and he is directing the subconscious to second his efforts.

The process of inquiry, as treated by Young, Becker and Pike, is recursive, intermittent, marked by apparent failure leading to rich insight, and always undulatory; it is comprised, that is, of alternating periods of work and rest, progress and stasis. That it is not a linear, predictable sequence is perhaps its most predictable quality. Learning to account for the mirages of only apparent solutions, for times of slow going and even outright failure while investigating a problem is seen, in tagmemic invention, as an important aspect of gaining some control over the naturally slippery process of writing. Or perhaps accounting for such obstacles to the problem-solving process is really just reaching an awareness that only limited aspects of the writing process, including invention, admit control. Heuristic procedures, anyway, are not to be misconstrued as shortcuts. Heuristics do not eliminate the work of writing. But they can, write Young, Becker and Pike, "reduce the amount of work and increase the intelligence of the mistakes."[9] They are a means of making certain portions of inventional process susceptible to deliberate, systematic manipulation, hence they are a means of introducing efficiency and a measure of stability to their inherently

unstable context, the process of inquiry.

TEACHING TAGMEMIC INVENTION

A course in rhetoric can provide a student with more than the systematized hindsight of editing. Tagmemic rhetoric addresses the early stages of writing in the belief that this dimension of writing process--the activity leading to and extending into drafting--can be affected by instruction. It assumes that a student's performance of the act of writing itself can grow more skillful, more certain of sucess and less haphazard in its progress. In order for this to come about, in classroom instruction the process of inquiry and the heuristics need to be taught as subject matter, and accompanied by demonstration and practice of the heuristics. Both the process and the heuristics are, in a sense, codifications of natural, inevitable writing activity; nonetheless, an individual writer needs to learn them. Self-awareness of spontaneous process is not in itself spontaneous, but acquired through education.

A writer needs to become aware of both what he typically does as he writes and what he can do to enhance what he presently does. Richard Young writes, for example, that tagmemic invention is concerned not only "with what we do when we engage in intellectual exploration," but also with what "we can do to increase our control over the activity--to make it more deliberate, efficient and complete."[10] Instruction in rhetorical invention offers a student the theory he needs in order to affect his own writing habits; it is an intermediary between past practice and potential for change. For if a student is to increase the efficiency of his inventional skills, if he is to exert any control over his habits of composing, he must develop a self-conscious awareness of the pattern recurrent in his writing behavior. And he can more easily discern this personal pattern in light of the general pattern for investigation which informs tagmemic invention, the process of inquiry. Through the use of heuristics as a means of intervening productively at crucial stages in the writing process, the student can learn to enhance his natural

writing capacity through the use of strategies. He can improve on what he already does.

Generalizing this principle to comprehend writing as a whole, Young, Becker and Pike write that an "intelligent stylist... behaves in new situations as if he has been there before..." Such a writer evidences "an ability to isolate and identify the problems inherent in the activity of writing and to move toward workable solutions deliberately..."[11] An intelligent approach to writing, then--both to individual stages of writing, such as invention, and to writing, overall--will always compare prior writing practice with what is possible. It is oriented to the strategic direction of writing process. Classroom instruction in the recurrent features of this process and in accompanying heuristic strategies--instruction in rhetorical theory, that is, and in its practical applications--is necessary if a student is to develop intelligent writing habits as a consequence of a class in composition. Without such instruction, a writer will, more likely than not, remain ignorant of what he does and can do as he writes. Writing itself will remain an unknown whose unfamiliarity is compounded by the new particulars of each writing situation.

Tagmemic invention offers a student several ways of decreasing the unfamiliarity of the early stages of writing. The process of inquiry and the heuristic devices give him the orientation and the tools to find his way through new writing tasks less blindly--with increased confidence and likelihood of success. And formal testing of tagmemic invention in the classroom confirms that it works, that it develops students' inventional skills with benefits to the overall quality of their writing.[12] If writing itself is to be taught in a rhetoric course, as contrasted with exclusive attention to after-the-fact editing; and if creativity and insight are to be valued and encouraged in writing; tagmemic invention provides the teacher with clear-eyed, realistic means of helping a student learn to write--intelligently.

NOTES

[1]Richard E. Young, Alton L. Becker and Kenneth L. Pike, Rhetoric: Discovery and Change (New York: Harcourt, Brace and World, 1970), p. 9.

[2]Young, Becker and Pike, p. 73.

[3]Ibid., p. 96.

[4]Richard Young, "Methodizing Nature: The Tagmemic Discovery Procedure," in press.

[5]Kenneth Burke, Permanence and Change, quoted in Young, Becker and Pike, p. 130.

[6]Young, Becker and Pike, p. 160.

[7]Ibid., p. 74.

[8]Jerome Bruner, On Knowing, quoted in Young, Becker and Pike, p. 130.

[9]Young, Becker and Pike, p. 135.

[10]Young, "Methodizing Nature."

[11]Young, Becker and Pike, p. 360.

[12]Richard E. Young and Frank M. Koen, The Tagmemic Discovery Procedure: An Evaluation of Its Uses in the Teaching of Rhetoric (Ann Arbor, Mich.: University of Michigan, NEH Grant No. EO-5238-71-116, 1973). (ERIC: ED 084517)